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ABSTRACT

This booklet was developed to help teachers evaluate student courses. It is not intended to provide the basis for a total evaluation, but as a "quick and easy" method to describe the basis of awarding student grades; identify ways in which to evaluate the effectiveness of a course of study; analyze the cognitive levels of test items; list the real goals of the course; and to prepare a plan for improving the instructional program. Two supplementary chapters deal with types of tests and assigning grades and planning final exams. (Author/MLP)

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FOREWORD

One of the effective ways of evaluating a course of study is to examine the basis for giving the students a grade. This booklet has been developed to help teachers evaluate the courses that they teach. It is not intended to provide the basis for a total evaluation, but as a "quick and easy" method for getting a preliminary idea of how effective the evaluation program is.

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CARROLLTON, GEORGIA — ALBERT F. EISS

FEBRUARY 2, 1973

CHAPTER I. HOW TO USE THE BOOKLET

This booklet is organized in the sequence in which it should be used. It is an *action oriented* booklet. It is intended to provide the basis for evaluating your program, and not for casual reading.

Before beginning to use this booklet, you should select a *major test* - - a mid-term or a final examination - - that you are using in your course, and a few of the *unannounced* quizzes that you have given. Collect these materials before you begin to read Chapter II.

Then, as you read, follow the instructions for each step that is suggested in the booklet. If you perform each task in the sequence in which it is listed, you will find that the sequence makes sense. Unless you follow the steps, you may fail to achieve the objectives of the booklet.

OBJECTIVES

After using this booklet, you will be able to

1. Describe the basis for awarding student grades;
2. Identify ways in which you are evaluating the effectiveness of a course of study;
3. Analyze the cognitive levels of test items;
4. List the "real" goals of the course; and
5. Prepare a plan for improving the instructional program.

STOP! DO YOU HAVE YOUR TESTS?

CHAPTER II. THE PRESENT SYSTEM OF EVALUATION

Many years ago, a famous philosopher said, "There is nothing new under the sun." This is particularly true for the evaluation process. There may be different combinations of evaluation techniques used in the process, but the basic principles have been the same for many years.

Most evaluation is centered around: a) quizzes and tests; b) oral responses, including recitations and oral reports; c) written responses, such as homework, workbooks, term papers, reports of literature research, and reports of experimental research; and d) demonstration of performance skills. Most student grades are calculated from a blend of two or more of these techniques.

Many aspects of present evaluation systems are valid and worthwhile. But this is not to say that there is no room for improvement. The first step in finding out the effectiveness of the present evaluation system is to summarize it for careful analysis. Until this is done you cannot evaluate its effectiveness.

If a student asks a teacher, "How do you figure my grade?" most teachers can provide a ready answer. Here are three possible replies that represent some common practics.

1. Averaging all the tests and quizzes	100%
2. Class quizzes	40%
Mid-term and final	30
Homework	10
Term paper(s)	20
Total	100%
3. Class quizzes	30%
Mid-term and final	30
Laboratory work	20
Library research paper	10
Class attendance	10
Total	100%

It would not be difficult to find flaws in each method. Is the first method fair to the hard working student who does poorly on tests? Should evaluation be all that mechanical, or should the teacher's judgment be involved? Is it fair to include part of the grade for homework, when so much is "borrowed"

from other students? Should a student be penalized for being absent, as long as he can keep his work done? Is there undue emphasis on the mid-term and the final? These questions must be answered by each teacher individually. The answers may vary, depending upon school policies and goals, the type of course being evaluated, and the type of student taking the course.

It may be desirable to define clearly what is meant by the terms *tests* and *evaluation*. In this booklet these terms will be used interchangeably, to denote all behavior, written, oral, or performance, that is used to determine what the student knows, or how well the course is operating.

It is important to remember that there is no way for a teacher to find out what a student knows or can do without some overt behavior on the student's part. Unless the student *says*, *writes*, or *does* something that the teacher can use as a basis for evaluation, there is no way of finding out anything about the student. Mind reading and osmosis are not valid techniques for evaluating others.

What is the basis for your evaluation system? Complete the following chart to show how you evaluate the quality of the course of instruction, the performance of the student, and provide the basis for student grades. If you do not evaluate all of these things, you should realize that you don't, and be willing to explain why you don't think the evaluation is necessary.

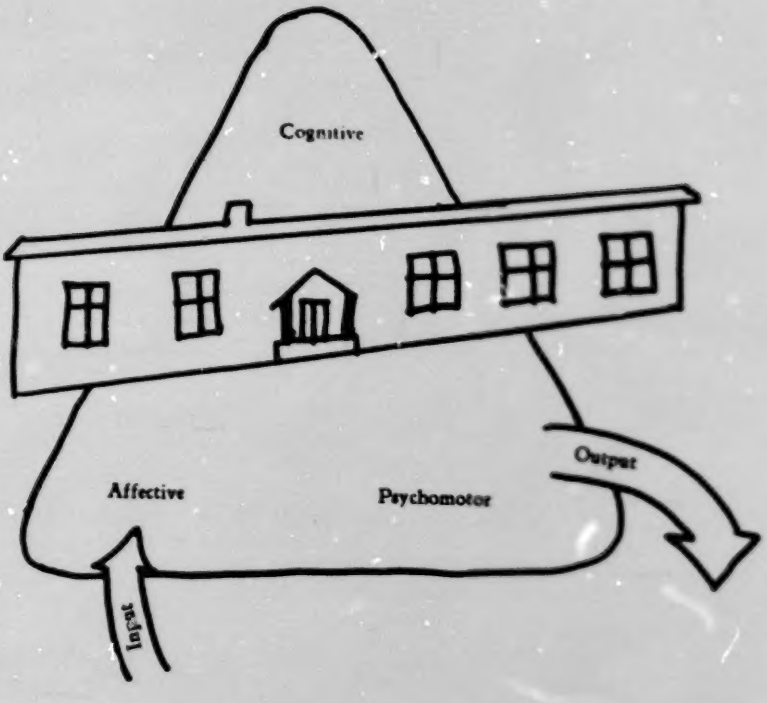
Use a check mark in columns *A* and *B* of the chart to show the items you evaluate. In Column *C*, related to providing the student with a grade, show the percentage of the final grade that is derived from each of the items used. You may check each column for an item, if it applies.

Column *A* deals with the extent to which you use the type of item to evaluate teaching effectiveness. Column *B* identifies the items that you use to evaluate what the student has learned. It asks the question, "Does this item measure the student's progress?" Column C deals *only* with the basis for providing the student with a grade for the course. Do not include in this column any reason for evaluating the student other than to provide him with a grade.

If other purposes of the item under consideration are not included in Columns *A*, *B*, or *C*, describe the use of the item in the last column, labelled *Other Purposes*. If you use the methods of evaluation not included in this chart, list them in the last item spaces.

CHART I. A SUMMARY OF THE EVALUATION PROCESS

Type of Item	Purpose of the Item			Other Purposes (List)
	A To evaluate teaching effectiveness	B To evaluate student learning	C To provide the basis for student grades	
Class Quizzes				
Announced Tests				
Standardized Tests				
Oral Reports				
Written Reports				
A demonstration of performance skills				
Class Assignments				
Class Attendance				
Other: (List)				



CHAPTER III. EVALUATING THE SYSTEM

So far in the booklet the attention has been given to the evaluation of the student. How can the information about the student help you to evaluate the instructional system? One criticism of many current learning systems is that they overemphasize the student's ability to memorize and recall information. Perhaps an analysis of the extent to which your course does this will make a good place to begin to evaluate the program.

Some years ago, Benjamin Bloom and others attempted to classify the cognitive levels of the learning process. They listed six cognitive levels:

1.00 KNOWLEDGE

Recall of information is emphasized in this category. The lower sub-levels include giving definitions and recalling specific facts. Higher sub-levels include classification, and knowledge of principles and theories.

2.00 COMPREHENSION

This includes the ability to translate (languages), to interpret, or exlain in your own words, and to extrapolate, or to extend trends or tendencies.

3.00 APPLICATION

This includes application of knowledge to specific situations.

4.00 ANALYSIS

This involves the breakdown of an idea into its constituent parts.

5.00 SYNTHESIS

This involves putting together parts of an idea.

6.00 EVALUATION

This includes exercising independent judgment to evaluate information in terms of both internal and external criteria.

A careful analysis of these six categories shows one very important fact - - when an individual works at a higher cognitive level, he demonstrates his ability to work at the lower levels. For example, before a person can make an application of a principle, he must have a knowledge of the principle. Before an individual can synthesize ideas into a term paper, he must have a good command of a wide number of facts, and be able to analyze ideas into their constituent parts. As a consequence, evaluation of the higher cognitive levels of learning includes a corresponding evaluation of many, if not all, of the lower cognitive levels.

DETERMINING COGNITIVE LEVELS

It is relatively simple to determine the cognitive levels of your evaluation program. Review the basis for grading students, as you have showed it on page 5. It is immediately apparent that oral and written reports will be at the levels of analysis and synthesis of information, and perhaps at the level of evaluation by using independent judgment. Performance skills are primarily psychomotor, but involve cognitive levels as high as application. It is evident that class quizzes, tests, and class assignments need to be evaluated in detail. Class attendance is not cognitive, so it is not a valid method of evaluating cognitive goals.

The following steps may help you to use the chart on the following page in your classification of cognitive levels:

Step 1. Identification of recall questions.

Review a typical sample of the tests you give, and determine the percentage of credit assigned to recall items. Record this in column 1 of the chart.

Step 2. Comprehension Items.

Repeat this process, identifying the comprehension items. These are frequently found in foreign language tests, and in questions that ask the student to state an idea in his own words. Record the per cent of these in column 2.

Step 3. Application Items.

Repeat the process, identifying application items. These are frequently found in problems and problem questions, in mathematics, and in physics. Record the per cent of these in column 3.

Step 4. Remaining Items.

Study the questions that have not been classified, and identify the cognitive level at which they are written. Record the per cent of these in columns 4, 5, and 6.

Step 5. Homework and Laboratory Assignments.

Analyze the homework and laboratory assignments, to determine their cognitive levels. Remember that any item that was specifically taught in class makes it a recall item, at the 1.00 level, regardless of the apparent level of the item.

The final step is to summarize your results. Use the chart to help you do this.

CHART II. A SUMMARY OF COGNITIVE LEVELS OF EVALUATION ITEMS

Type of Item	Approximate per cent of items at each cognitive level						Cannot be classified
	1	2	3	4	5	6	
Class Quizzes							
Announced Tests							
Class Assignments							
Standardized Tests							
Oral Reports							
Written Reports							
Other: (List)							

ANALYSIS OF DATA

It is probable that your data are not suitable for statistical treatment, but an inspection of the relative amount of emphasis on the various cognitive levels should give you some idea of whether or not you should be satisfied with the emphasis that you have given to the various types of items.

EVALUATING SKILL IMPROVEMENT

The best way of evaluating a skill is to ask the students to demonstrate their ability to perform a task that requires the use of the skill. If the students can perform the task satisfactorily, it should be accepted as evidence that they have mastered the skill.

MEASURING AFFECTIVE GOALS

Educators often avoid trying to evaluate students' attitudes and interests in the course - - the affective goals. At the same time, aversion to school and to learning has been developing in students at an alarming rate. In addition to providing students with grades, an evaluation of the course should examine the students' attitudes and interests, and the effectiveness of the instructional program. The quality of a course is unlikely to improve as long as the lack of interest and attention is blamed on the student. Regardless of the efficiency of the learning system, if the student learns to hate to study, the entire purpose of the learning system is largely negated. The affective domain should be given careful, serious attention.

Affective components are essential in all learning. The lowest level of the affective - - the level of awarness - - is essential before *any* learning can occur. The next higher level - - willingness to receive - - is necessary if learning is to continue. Evaluation is impossible without the next affective level - - the willingness to respond. Until the student gives some overt response, the teacher has no way of knowing whether or not learning has occurred. It is not necessary to measure the achievement of affective goals at these levels, because they must be present before any learning can be evaluated.

The higher affective levels — the development of values and value systems — is where attention is needed. In a thorough study of affective goals, it has been found that:

1. Often, you cannot measure affective goals directly, by using check lists and attitude scales. Students have been conditioned to tell the teacher "what he wants to hear" for so many years

that the student often will answer what he thinks is wanted, and not tell how he really feels.

2. Results of affective measures is an indication of the quality of the course, rather than providing the basis for grading the student. The student may have learned a lot of information, but he may have learned to hate the course and the instructor at the same time.

3. Students are not averse to hard work if they are interested. Some of the higher rated courses and teachers are the ones that required the most effort in the classroom.

It is beyond the scope of this booklet to tell you how to evaluate affective goals. Question 8 to 10 on the check list on page 14 will give you some idea of the extent to which you are using affective goals in your evaluation. If you are interested in learning more about affective goals, the following references may be helpful:

Eiss, A. F., and Harbeck, M. B., *Behavioral Objectives in the Affective Domain*. Washington: The National Science Teachers Association, 1969.

Mager, Robert F., *Developing Attitude Toward Learning*, Palo Alto: Fearon Press, 1968.

IDENTIFYING GOALS

You are now ready to identify the "real" goals of your course. These are to be distinguished from the list of goals that may, or may not lie in the office file. The real goals of your course are to be derived from the analysis of your evaluation program, the way you grade your students, and the amount of time that you spend on various items in the course.

Refer to your analysis of evaluation procedures that you did earlier in the chapter. What per cent of emphasis do you place on each of the following goals?

per cent of emphasis

1. The student will recall items of specific information when asked. _____

2. The student will demonstrate skill in performing assigned tasks. _____

3. The student will demonstrate his comprehension of the subject by translating, interpreting, and/or extrapolating information. _____

4. The student will demonstrate his ability to apply specific information in new situations. _____

5. The student will demonstrate his ability to analyze ideas, and synthesize them in a new context. _____

6. The student will demonstrate his ability to exercise independent judgment on the consistency and reliability of various items of information and information sources. _____

7. The student will demonstrate his interest and enthusiasm for the subject. _____

8. The student demonstrates his sense of values and possesses a sound value system. _____

9. Other goals: (State)

ANALYZING RESULTS

Every course will not necessarily include each of these goals. For example, a course in typing or shorthand might place major emphasis on goal no. 2. A course in introductory mathematics might emphasize goal no. 4. And a course in French I might place considerable emphasis on goal no. 3. Goal no. 7 is very important, and should be given considerable emphasis. Perhaps goal no. 8, related to values, will not receive major attention, but it is very important.

If the analysis of your evaluation program shows a great amount of emphasis on goal no. 1, perhaps you should plan to work for some higher cognitive levels of learning. If your course does not place adequate emphasis on affective goals, you should consider the need for giving attention to this important aspect of learning.

SUMMARY CHECK LIST

The questions that follow may point out some of the ways in which you may improve your course. Check in the proper column the extent to which your course meets the following criteria: 2 — excellent, 1 — satisfactory, 0 — needs improvement.

A. PHILOSOPHY AND GOALS

_____ 1. Does the evaluation program include *all* of the goals of the course?

_____ 2. Do the goals derived from the analysis of the evaluation program correspond to the stated goals for the course?

_____ 3. Are the students informed of the goals and objectives of the course at the beginning of study?

_____ 4. Is there a fair balance in the grading system among the various modes of evaluation?

_____ 5. Do the students know at the beginning of the course what the basis for evaluation will be?

B. COGNITIVE LEVELS

_____ 6. Is there reasonabe emphasis on achieving higher cognitive goals?

_____ 7. During the course, is there progress in raising the cognitive levels of learning?

C. AFFECTIVE GOALS

_____ 8. Is there adequate emphasis on evaluating the achievement of affective goals?

_____ 9. Does the emphasis on affective goals provide a basis for evaluating the effectiveness of instruction, rather than determining the student's grade?

_____ 10. At the completion of the course, is each student asked to give a written evaluation of its effectiveness, and make suggestions for improving it?

D. SKILL DEVELOPMENT

_____ 11. Does the student know precisely what skills and what level of skill development is expected of him?

_____ 12. Is there a thorough evaluation of skill proficiency?

E. CO'JRSE EVALUATION

_____ 13. Does each student have frequent opportunity to provide feedback on ways of improving the course?

_____ 14. Are these suggestions welcomed and carefully analyzed by the instructor?

_____ 15. If the students are screened before entering the course, is there a high level of achievement?

_____ 16. If the students are not screened, is provision made for tutoring those who need extra help?

_____ 17. Does the instructor spend at least 75 per cent of his time helping students and answering questions?

CHAPTER IV. LOOKING AHEAD

How did you "make out" in the check list? Did you get a score of 20 or more? Good for you! Did your score approach 30? If it did, you are either a most excellent teacher, or are prone to wishful thinking.

How many zero scores did you have? Maybe this will show you a good place to begin. Select the item or items you think are most important, and begin making plans to improve them. When you begin making plans for improvement, the following ideas may be helpful.

1. ACHIEVING GOALS

a. There is a need for clearly defined goals and objectives. If any are missing, they may need to be written for your own and student use.

b. There is a need for evaluating *all* the goals of your course, especially in the affective domain and at the higher cognitive levels at which you expect the students to achieve. Students find it impossible to raise the cognitive level of their thinking without help.

c. Each student *has a right* to know the objectives and goals of the course at the beginning of study. The failure to provide this information may account for many student failures.

2. IMPROVING COGNITIVE MEASUREMENT

a. You may need to practice writing test items to measure higher cognitive goals of learning.

b. You may need to practice writing test items to measure goals and objectives that were not evaluated.

c. You may need to reexamine the levels of achievement that you expect of the students, to see if they are realistic and consistent.

d. You may need to develop a better working system for giving student grades.

3. IMPROVING AFFECTIVE MEASUREMENT

You may need to give some careful thought and effort towards developing methods of evaluating affective goals.

4. RE-STATING GOALS

You may find that your statements of goals and objectives are "fuzzy" and unclear. You may wish to sharpen them up by giving more emphasis to ways in which you will evaluate outcomes.

5. PLANNING FOR CONTINUING CHANGE

a. You may find a need for developing better methods of diagnosing students' weaknesses, and assisting them to overcome gaps in their knowledge. On the other hand, it is a waste of time to try to teach students what they already know.

b. You will definitely need to make long-range plans for keeping your course up to date, avoiding the accretion of useless information when new ideas are brought into the course.

CONCLUSION

Now, what's next? After completing all this analysis, what is going to happen? If your answer is, "Business as usual," the effort spent in producing and working with this booklet has been wasted.

Choose several of the areas that need improvement, and rank them in the order in which they should be attacked. Set up an informal plan for dealing with these problems. Be sure that the plan includes opportunities for students to evaluate the program, as well as helping to plan for improvement. A program of continuing evaluation of the course is essential. History has taught us that organisms and systems that fail to adapt will eventually become extinct. It would be unfortunate if this should happen to education. A thoroughly planned, continuing program of evaluation and improvement is the best way of guaranteeing that this will not happen.

Before you begin making plans for change, you may wish to read the next chapters, which tell you more about tests and testing. If you are ready to begin work, don't hesitate to skip the rest of the booklet. The important thing is to plan changes that will improve the learning system.

SUPPLEMENT

CHAPTER V. TYPES OF TESTS

When tests were first used in schools, the teacher usually had some absolute standard of achievement in mind. Often, the student had no idea of what this standard was, and frequently the teacher would have found it difficult to tell him. But the absolute, 100 per cent idea was there, and each student was measured on the degree to which he could achieve this goal of excellence.

For the last generation or more, a different viewpoint of grading has come into prominence. Frequently, test results are now used as a basis for comparing one student's achievement with that of the other students. This is more properly called ranking the students, and student rank has become a very important item for each individual. It is fairly easy to rank small classes and groups. But with larger groups a problem arises. Is there a measurable difference between one student with a year's average of 83.26 per cent, and another with an average of 83.27 per cent? The procedure is not sensitive enough to rank large numbers of students, but merely to separate them into groups. The groups can be identified reasonably well, even though the students form a continuum, and not distinct groups. Often these groups are called A, B, C, D, and F.

This has created another problem. Any group of students, no matter how intelligent or how dull, can be classified arbitrarily into these five divisions. The letters indicate where each student stands in relation to others in the group, and bears little or no relationship to how much the student knows or has learned. This is the quandary in which many school systems now find themselves.

The process of ranking creates another serious problem. As long as students are not specially selected or classified, they usually fit reasonably well into these categories. In the past, those who continually found themselves in the *F* group soon "got the message," and dropped out, while the others continued with further learning. Some of the *C* group dropped out, some continued to obtain more education, and others became successful financiers.

The world and society have changed, but the curriculum hasn't. The "academic" secondary school courses consist of traditional content that parallels closely what was being taught in 1890. As enrollment pressures increased, many schools and colleges became more selective in their admissions policies. Registrars began to require College Boards, and raised the "cut-off point" for admission higher and higher, so that many if not most, potential *F* students were eliminated before they were admitted.

Then what happened? "School standards" were raised, so that there were as many *F* students as there were before. In many schools, student competition has become so keen in recent years that an increasing number of students are no longer willing to participate in the so-called "rat race," and refuse to play the game. Schools that are less selective in their admission policies accept a greater number of less "qualified" students. These schools are forced either to "flunk out" large numbers of students, or lower their "academic standards." As a result, they are frequently considered second-class schools, although they may be doing a more effective educational job than the "big name" schools and universities.

This warped viewpoint has gone to the extreme that some teachers brag about how good their courses are if they flunk half or two-thirds of their students, instead of recognizing this result as an indication of the inefficiency of their teaching. On the other hand, the supervisors in some schools, and colleges have been known to criticize a good teacher by insisting that too many of his carefully pre-selected students have been learning too well, as shown by too many high grades for the students. It is unfortunate that so many people in positions of authority know so little about education that they create such impossible situations for others. An evaluation of the learning systems, including the goals and philosophy of the institution, will point to some possible solutions, and may bring some common sense into the educational process.

There is no evidence that the learning of a carefully selected and well taught group of students should fall along a normal curve. But there is a great deal of evidence that 90 per cent of these students can achieve the goals of the program at the 90 per cent level, if the goals are clearly stated, and the instructional program

is well planned. Schools at all levels will have to face the reality that the failure of a group of carefully selected students to learn is an indication of the ineffectiveness of the system, and not the fault of the students.

STANDARDIZED TESTS

Standardied tests have been a "way of life" for students for several generations. For many years, standardied tests have been accepted "on faith," and their results were used in making important decisions affecting the future of many individuals. But during the last two or more decades, standardized tests have been more critically examined, with some rather alarming results.

The one thing that a standardized test does is to compare one group of students with other groups. Standardized tests are frequently used to compare how thoroughly common items of course content are taught in various sections of the country and in various schools. Such tests are produced by surveying courses in various parts of the country to find what is included, and then constructing a test to evaluate how well the students have learned this information. In some cases, the teachers may be teaching outdated information, or incorrect ideas, but that doesn't matter, as long as they are all teaching the same things. The test may measure the student's ability to "parrot back" trite expressions, and penalize the student who is original or thinks critically; but that is all right, as long as that is the way the teachers are teaching, and these are the goals of the educational systems.

But when a standardized test is used to judge the ability of a particular individual, we are confronted with a serious problem. Individuals are different, and they don't fit a single pattern. Any statistician can tell you that it is impossible to deal with one individual on a statistical basis. You can deal with a group of individuals statistically, but one individual, or a single event, is unique. Statistical treatment cannot be used unless there is a population or a group of events to study.

For example, a study of the I.Q.'s of the 3500 individuals who received a PhD. in 1957 showed that the median I.Q. of the group was about 130.[2] This can provide the basis for saying that most individuals with an I.Q. of 130 or more might make good PhD.

candidates. But it *does not* provide the basis for saying that an individual with an I.Q. of 110, or even 100 cannot successfully obtain a PhD. degree. In fact, three of the individuals who obtained their PhD. in 1957 had an I.Q. *below* 80, as measured by the stanadrdized tests that were used. Three per cent, or *three in every hundred* had an I.Q. that measured below 100. It's obvious that the I.Q. as measured on standardized tests may be useful in dealing with a large group statistically, but it is not a valid measure of the potential of a single individual.

Standardized tests should be used only after a careful analysis shows that they are measuring the goals for which you are working. If a test maker refuses to submit his test for analysis, it should be rejected for that reason. If you can't tell what the test measures, of what use is it? What is the value of ranking students if you don't know the basis on which they are ranked? Frequently, a comparison of an analysis of what a test measures and what the publisher claims that it measures will give ample reason to insist on a personal analysis of each test before it is used.

Some tests are prepared so that the answers to many questions can be selected by eliminating obviously incorrect answers, and making intelligent guesses among the remaining answers. Many tests measure the student's reading ability, as much as his knowledge of the subject that is being tested. Some tests measure cultural patterns. For example, asking a southern student to discriminate between snowshoes and a sled may not measure his vocabulary any better than to ask a northern student to discriminate between corn dogs and hush puppies. As another example, the College Boards may be effective for predicting the success of students to succeed in colleges X and Y, whose goals require students to perform the types of things measured by the test, while the same test may be useless, or even negative in its effectiveness in predicting student success in colleges A and B, which were established for different goals.

CHAPTER VI. ASSIGNING GRADES AND PLANNING FINAL EXAMS

In dealing with student achievement, there is a definite trend away from using standardized tests and the normal curve, and towards a return to the absolute standards of achievement that have been used by many schools all along. When absolute standards are used, the teacher is commended for having a class with high scores, and no failures. It is true that new names may give the impression that new techniques are being used. A test designed to measure what a student knows based on an absolute standard is now called a *criterion test*, to distinguish it from a *normative test* which is scored on the normal curve. But the criterion test is really the old idea of an absolute standard under another name.

When planning the learning environment, it is necessary to remember that students vary greatly in the amount of time that they need to learn a given amount of content or a given skill. As long as time is held constant, the amount learned will tend to fall along a normal curve. Some students will finish ahead of the others, while others never finish. Because the time factor is critical for many students, the teacher and the students must make many important decisions about the relative importance of what is to be learned, so that the student who requires more time to learn will be directed into learning the things that will be the most important for him.

GRADING STUDENTS

But let's not throw out the baby with the bath, but look at ways in which grades can be used legitimately and effectively. In many schools, the primary purpose of evaluation is to provide grades for the students. Regardless of whether a teacher thinks grades are essential, useful, or harmful, grades are often required. Students expect them, parents often demand them, and teachers are usually required to give them. Instead of debating the desirability of this common practice, let's consider ways of giving grades that will be fair to the students, and reasonably easy for the teacher.

Probably the most common practice of arriving at a final grade is averaging all the test scores and other grades in the course. However, this is often a tedious job and does not provide the opportunity to "weigh" the more important scores as opposed to minor quizzes.

Another practice may be to calculate the total cumulative evidence of achievement, raw scores for the course, including quizzes, tests, term papers, and other evidences of achievement, and then decide the level for A's, B's, etc. This will result in "grading on the curve," if the instructor chooses the top five per cent of the students for A's, 22 per cent for B's, etc. However, if absolute score standards are selected and announced to the class *before* the course begins, all the students could conceivably get an *A* if they worked hard enough. One difficulty with this technique is that it may become cumbersome. If the cumulative score is kept after each evaluation step, it will save adding large rows of figures at the end of the course, and each student will have the opportunity to see how well he is progressing.

Still another technique might be to list the topics in the course, and insist that each student demonstrate his command of each topic. With this system, the student's grade would be derived from the number of topics that he has mastered, with the *A* students completing all the topics, and the *F* students failing to complete a satisfactory number. An alternative to this procedure would be to extend the time allowed for the slower students, so that everyone could eventually "pass" the course.

You may have other methods of grading students that you prefer to use. That is all right, as long as the student knows in advance what they are, and thinks that the techniques are fair.

It is quite difficult and cumbersome to prepare objective type test items that will measure the higher cognitive goals of learning. The best way of measuring higher cognitive goals is to ask the student to prepare a report or a term paper on some topic or research project, to give him an opportunity to think and work at the higher cognitive levels. Many teachers avoid such assignments because of the difficulty of grading reports particularly if they are assigned near the end of the school term, when there are many

other things to do. Students frequently object to them, because so often they are required to write a lot of nonsense about something in which they are disinterested, and at a time when they think they should be "studying for exams" - - that is, cramming a lot of facts to "parrot back" on the final exam.

To reduce the danger that the student will be required to work on a topic in which he is uninterested, why not let *him* choose the topic with your approval, within the framework of the course? Perhaps the topic that he selects isn't as important as one you might choose, but it's *his* preference. If he is interested in it, he may learn much more than he will from working with a topic that he doesn't like.

Another problem that you may face is that the student isn't able to write an intelligible paper. If this is the situation, perhaps it is more important for him to learn to communicate effectively than it is for him to learn a lot of facts about your subject - - facts that he is soon apt to forget anyway. One of the weaknesses of our present educational program is that some students pass through it without ever learning to communicate. This lack should be remedied at whatever level in the educational system it is encountered. Student produced materials, including art work, manual productions, tape-slide sequences, and other original ideas should be encouraged.

To avoid the problem of work "piling up" near the end of the term, why not schedule the term paper or other project three or four weeks *before* the end of the term? This would give you plenty of time to evaluate outcomes and assign fair grades, and still be able to return them by the last week of class, when your comments may help the student review the final exam.

Some students procrastinate on term papers or other assignments, and then do a "crash project" the night before they are due. This can be prevented by preparing a timetable that requires the student to give a rough outline of what he intends to produce several weeks before it is due. A little later the references that he expects to use and be required, and still later a rough draft, or progress report, so that you can suggest additions or omissions. If this is done, the final production will merely be a rewriting of

the last draft or completing the project. You will find that these steps do not require much of your time, because you can "skim" the material - - the work will not require a critical analysis until the final product is completed.

If you have trouble getting final grades ready when they are due, here is a procedure that may be helpful. Before the day of the final exam, compute each student's score to date. If the evaluation of the higher cognitive level goals has been completed before the "final," this exam can be a quick-scoring, objective type test designed for a separate answer sheet. If machine scoring is available in your school, you can have the final scores an hour after the exam is completed. You will find that four out of every five of the students' grades on the final will be in the same range as their averages, making it simple to give them a final grade. Most of the other final grades can be decided upon easily, leaving perhaps three or four students in the entire class which will require more thought and consideration. You can then concentrate on arriving at a fair grade for these few, because the rest will already be decided. It is not difficult, using this technique, to have final grades ready to hand in only a few hours after the final exam is is completed.

CONCLUSION

Your evaluation system is what you make it. It can be narrowly conceived, to provide each student with a grade, and nothing more. It can include an evaluation of the learning system, providing the basis for revision and improvement. Whatever the evaluation system is designed to do, you should analyze it to find whether or not it is doing what you expect it to do. Probably there is no better way of improving the curriculum than to begin with the development of a good system of evaluation.

BIBLIOGRAPHY AND REFERENCES

1. page 6.

Bloom, Benjamin S., Editor, *et al, Taxonomy of Educational Objectives. Handbook* 1: *Cognitive Domain,* Longmans, Green and Co. New York, 1956.

2. page 19.

Strauss, Samuel, "On the Doctorate in Education," *Journal of of Teacher Education,* March, 1965. Also see *Science Education* 49:1 pp14ff.

Other Useful Information Sources

Eiss, Albert F. *Tests: Their Production and Use, Innovations,* Inc., Carrollton, Georgia 30117, 1971.

Eiss, Albert F., *Evaluating Learning Systems,* Gordon and Breach. New York, 1970.

Krathwohl, David R., *et al, Taxonomy of Educational Objectives. Handbook II. Affective Domain,* David McKay Company, Inc. New York, 1964.

Other references to the Affective Domain may be found on page 11 of this booklet.